

**Notice of Allowability**

Application No.

10/726,377

Examiner

Robert J. Hoffberg

Applicant(s)

CHU ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.


1. ☒ This communication is responsive to 3/15/06.
2. ☒ The allowed claim(s) is/are 1, 4-9, 11-13, 16-20, 22-24 and 27-29.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**LYNN FEILD**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

***Detailed Action***

***Allowable Subject Matter***

1. Claims 1, 4-9, 11-13, 16-20, 22-24 and 27-29 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter: Claims 1, 13 and 24 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a cooling system comprising of "at least two modular cooling units (MCUs)" comprising a "heat exchanger", a "first loop cooling loop" with "at least one control valve" receiving "chilled facility coolant" and passing a portion to the heat exchanger, a "second loop" providing "cooled system coolant" to "multiple electronics", a "control valve" regulating the temperature of the loops, wherein one MCU is operational and the other is in standby mode and has coupling to allow for removal, and "system expansion coolant tanks" of the at least two MCUs are in "fluid communication to ensure that sufficient system coolant remains in the system coolant expansion tank of an operating MCU." The closest reference to the present invention is believed to be Takahashi et al. (US 6,182,742) that teaches two cooling units with a single coolant tank, each cooling loop comprising a heat exchanger, a first cooling loop with a valve for receiving "chilled facility coolant" and passing a portion to the heat exchanger, a second loop providing cooled system coolant to multiple electronics, a control valve regulating the temperature of the loops, wherein one MCU is operational and the other is in standby mode.

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The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 1, 13 and 24 and all claims dependent thereof patentable over art of record.

3. The following is a statement of reasons for the indication of allowable subject matter: Claims 11 and 22 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a cooling unit comprising of a "heat exchanger", a "first loop receiving chilled facility coolant", a "second loop providing cooled system coolant" to the electronics, a "control valve" regulating the temperature of the loops, and "system coolant tank" containing the heat exchanger inside of it. The closest references to present invention are believed to be Choi (KR 2003057159) and Laing (GB 2216997 A) that teach a heat exchanger contained within an expansion tank in a heating application. Funke (US 4,854,382) teaches a plate heat exchanger that can be mounted directly on an expansion tank.

The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 11 and 22 and all claims dependent thereof patentable over art of record.

### ***Response to Arguments***

4. Examiner's rejection regarding the terminal disclaimer is withdrawn because claims in this application as amended are distinguishable over claims of co-pending application 10/726,347.

Applicant's arguments filed 3/15/06 regarding "the system coolant tanks of the at least two MCUs are connected in fluid communication to ensure that sufficient system

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coolant remains in the system coolant tank of the operating MCU" have been fully considered and are persuasive. The rejection contained with the examiner's office action of 12/15/05 has been withdrawn.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawashima et al. (US 4,865,123) teaches a plurality of CCUs in an electronic system. Hare et al. (US 6,035,655) and Stahl et al. teach redundant cooling systems. Stefani (US 5,226,471) teaches a bypassing to isolate a leaking CCU. Mizuno et al. teaches a controller to control the operation of the CCUs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH

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*Lynn Feild*

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